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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,217	10/28/2003	Heum-Il Baek	053785-5013-01	2946

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EXAMINER	
RUDE, TIMOTHY L	

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/694,217	BAEK, HEUM-IL	
	Examiner	Art Unit	
	Timothy L Rude	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 29-33* is/are pending in the application.

4a) Of the above claim(s) *31 and 33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,10-12,29,30 and 32* is/are rejected.

7)☒ Claim(s) *6-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/850,186.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20031028*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 31 and 33, drawn to a liquid crystal display of embodiment two, (Figure 9) is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 20040616.

Applicant's election with traverse of Species A, embodiment one, claims 1-12 29, 30, and 32, drawn to a liquid crystal display of embodiment one, (Figure 6), in Paper No. 20040616 is acknowledged. The traversal is on the ground(s) that a thorough search of any one Species would encompass a search of the subject matter of the remaining Species, there would be no serious burden on the Examiner, and the Examiner must examine it on the merits. This is not found persuasive because the structure of the two Species is substantially different, especially the contrasting liquid crystal (LC) layer thickness, wherein Species A has a relatively uniform LC layer thickness while Species B has a substantially different LC layer thickness in the reflective region vs the transmissive region. Species A has a relatively long-standing LC layer configuration that has numerous variations in the prior art. Species B has a comparatively new LC layer thickness configuration that has yet to be assigned a distinct subclass within class 349. It is respectfully pointed out that a thorough search of one Species would therefore not reliably encompass a search of the subject matter of the remaining Species, and the additional search and examination effort required would pose a serious burden on the

Examiner. Furthermore, a determination of allowable subject matter in one Species would have no relevance to any determination of allowable subject matter in the other Species.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1, 31, and 33 are amended.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

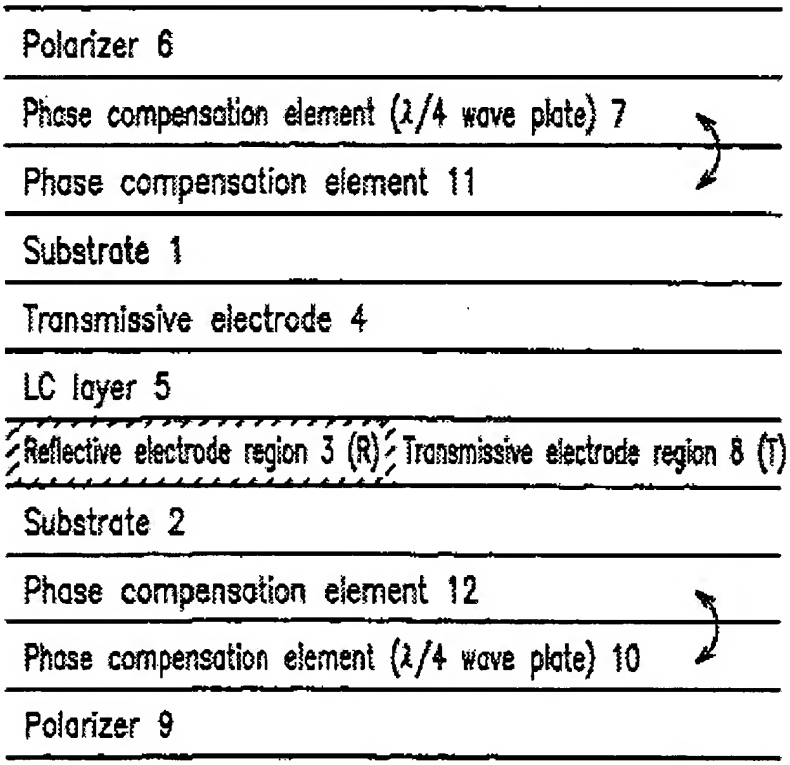
> A person shall be entitled to a patent unless –
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1, 2, 4, 29, 30, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Kubo et al (Kubo) USPAT 6,295,109 B1, provided by Applicant.

As to claims 1, 29, 30, and 32, Kubo discloses in his description of the preferred embodiments (embodiment 1, col. 8, line 20 through col. 19, line 54, and especially

second example, col. 19, line 55 though col. 24, line 55, as shown in Figures 8A and 8B), a transflective display that reads on Applicant's species A, [Applicant's Figure 6] which is equivalent in most other regards to Examples 3 (regarding retarders applicable to Example 6) (col. 24, line 56 through col. 29, line 67) and 6 (regarding electrodes and other structure), (col. 47, line 50 through col. 51, line 25) a transmissive and reflective type (Applicant's transflective) (col. 8, lines 37-40) liquid crystal display, comprising:

FIG. 3



substrate 1 (Applicant's upper) and substrate 2 (Applicant's lower), substrates facing into and spaced apart from each other, wherein the upper and lower substrates include a plurality of pixel regions (region R and region T) that display images;

FIG. 21

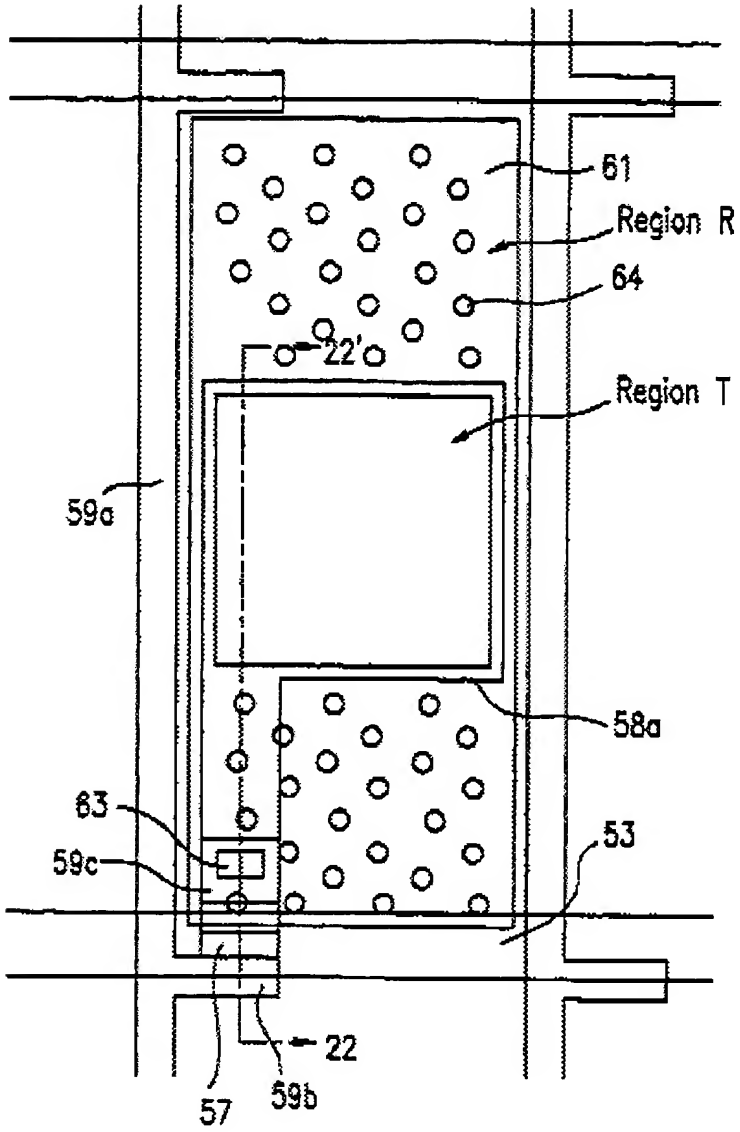


FIG. 8A

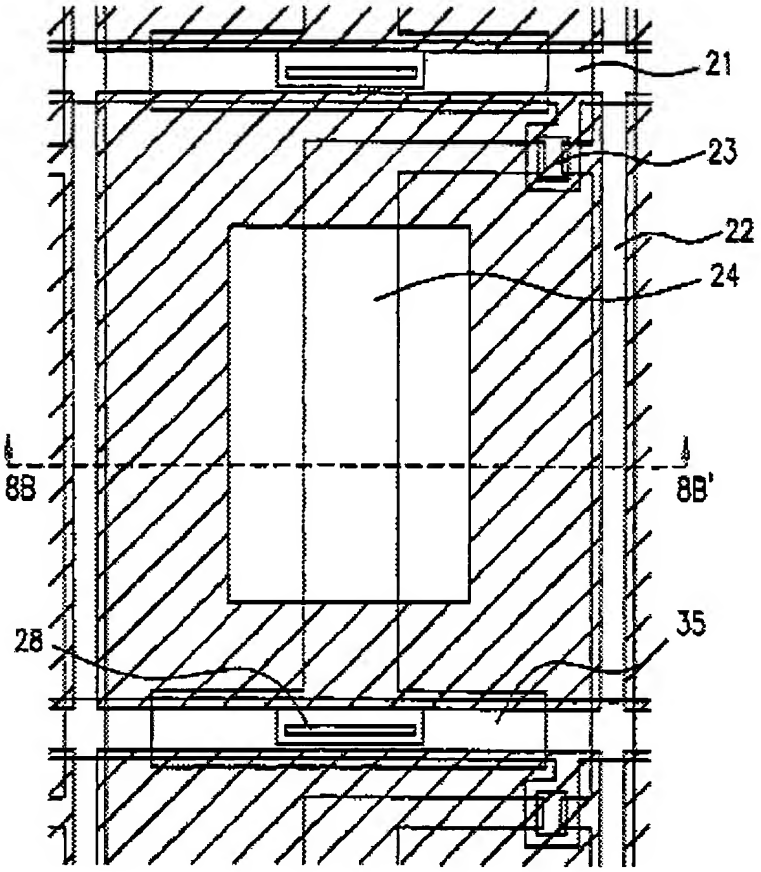
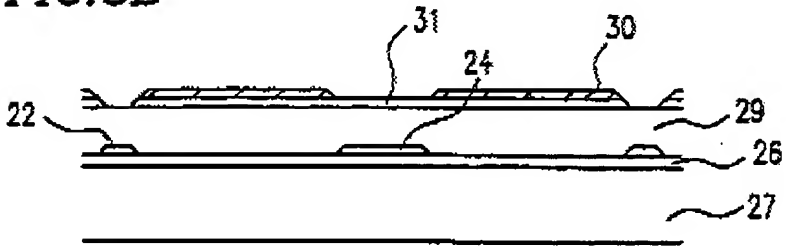
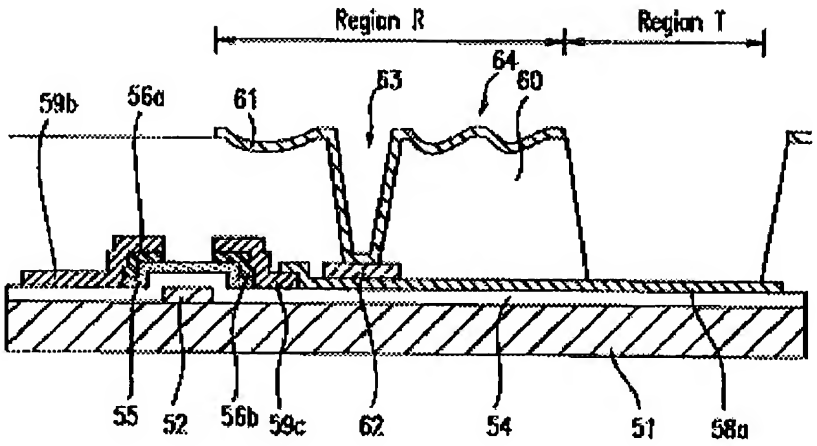


FIG. 8B



Structures in Figures 8A and 8B are largely similar to Figure 22 with exception of the removal of material in Region T:

FIG.22



a liquid crystal layer, 5, interposed between the upper and lower substrates, wherein the liquid crystal layer has a first adjusted thickness (region R) to compensate a residual optical retardation of incident light caused by anchored liquid crystals near an alignment layer when a maximum operation voltage is applied;

a first upper retardation film, 11, over the upper substrate;

a second upper retardation film, 7, between the first upper retardation film (interchangeable as indicated) and the upper substrate, wherein the second upper retardation film has a second adjusted thickness of compensating an optical retardation caused by the liquid crystal layer (col. 28, lines 32-53);

an upper polarizer, 6, on the first upper retardation film;

a transparent common electrode, 4, on a surface of the upper substrate facing into the lower substrate;

a pixel electrode over the lower substrate, wherein the pixel electrode corresponds to each pixel region, and the pixel electrode is divided into transparent, 58a, and reflective, 61, portions;

a second lower retardation film on the other surface of the lower substrate, wherein the second lower retardation film has a third adjusted thickness to compensate a residual optical retardation caused by the liquid crystal layer when a maximum operation voltage is applied;

a first lower retardation film, 12, under the second lower retardation film, 10, (interchangeable as indicated);

a lower polarizer, 9, under the first lower retardation film; and

a backlight device arranged adjacent to the lower polarizer (col. 13, lines 25-35). Note that Example 3 is a description of the retarder and polarizer arrangement applicable to Example 6 and is therefore not an obviousness type rejection.

As to claim 2, Kubo discloses the transflective liquid crystal display according to claim 1, wherein the transparent portion of the pixel electrode (region T) includes a transparent electrode, 31, being disposed on a surface of the lower substrate facing into the upper substrate.

As to claim 4, Kubo discloses the transflective liquid crystal display according to claim 3, wherein the reflective portion of the pixel electrode includes a reflective electrode, 30.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 3, 5, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo, as applied to claims above, in view of other embodiments of Kubo.

As to claim 3, Kubo teaches the transflective liquid crystal display according to claim 2.

Kubo does not explicitly disclose in embodiment one a display further comprising a passivation layer on the transparent electrode.

Kubo teaches a display further comprising a passivation layer on the transparent electrode to allow adjustment of the liquid crystal layer thickness.

Kubo is evidence that ordinary workers in the art of liquid crystals would find the reason, suggestion, or motivation to add a passivation layer on the transparent electrode to allow adjustment of the liquid crystal layer thickness.

Therefore, it would have been obvious to one having ordinary skill in the art of liquid crystals at the time the invention was made to modify the LCD of Kubo with the

passivation layer on the transparent electrode of Kubo to allow adjustment of the liquid crystal layer thickness.

As to claim 5, Kubo, as combined above, teaches the transflective liquid crystal display according to claim 4, wherein the reflective electrode is disposed on the passivation layer and has a transmitting hole in a central portion to allow for a transmissive portion.

As to claim 10, Kubo, as combined above, teaches the transflective liquid crystal display according to claim 1, wherein a slow axis of the lower QWP is perpendicular to that of the upper QWP (col. 27, lines 13-21) to provide satisfactory retarder performance.

As to claim 11, Kubo, as combined above, teaches the transflective liquid crystal display according to claim 1, wherein the liquid crystal layer includes a homogeneous liquid crystal that is arranged in a vertical direction when a voltage is applied.

As to claim 12, Kubo, as combined above, teaches the transflective liquid crystal display according to claim 1, wherein the optical axis of the liquid crystal layer is parallel to the slow axis of the lower QWP.

Allowable Subject Matter

Claims 6-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 6 may be allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a transflective liquid crystal display as claimed, wherein the first adjusted thickness is d+d.sub.1, where d is a normal thickness of the liquid crystal layer and d.sub.1 is calculated using the following equation,

$$T = \mathrm{Sin}^2 2\phi \mathrm{Sin}^2\left[\frac{\pi \cdot \Delta n \cdot d_*}{\lambda}\right],$$

where T is a value of transmittance when a maximum operation voltage is applied, .phi. is an angle between an optical axis of the liquid crystal layer and a transmissive axis of the polarizer, .DELTA.n is a birefringence of the liquid crystal layer.

The closest reference is Kubo who discloses the displays as rejected above. However, Kubo does not teach use of a first adjusted thickness limited as claimed.

As to claim 8 may be allowable over the prior art of record because the latter, either alone or in combination, does not disclose nor render obvious a transflective liquid crystal display as claimed, wherein the second adjusted thickness of the upper QWP is d+d.sub.2, where a normal thickness of the upper QWP is d and d.sub.2 is calculated from the following equation,

$$T = \mathrm{Sin}^2 2\phi \mathrm{Sin}^2\left[\frac{\pi \cdot \Delta n \cdot d_*}{\lambda}\right],$$

where T is a value of transmittance, .phi. is an angle between a slow axis of the upper QWP and a transmissive axis of the polarizer, .DELTA.n is a birefringence of the upper QWP.

The closest reference is Kubo who discloses the displays as rejected above. However, Kubo does not teach use of a second adjusted thickness limited as claimed.

Claims 7 and 9 may be allowable because they are directly dependent upon claims with allowable subject matter above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (571) 272-2301. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tlr

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